Five-Year Review Report

First Five-Year Review Report

For

Del Norte Pesticide Storage Area

Del Norte County
California

September 2000

PREPARED BY:

Region 1X

United States Environmental Protection Agency

San Francisco, CA

Approved by: Date:

Keith Taka 9-26-00

Keith Takata
Division Director
U.S. EPA Region IX

Table of Contents

Tables

Attachments

List of Acronyms

1,2-DCP	1,2- Dichloropropane
2,4-D	2,4- Dichlorophenoxyacetic acid
µg/L	micrograms per liter
ARARs	Applicable or Relevant and Appropriate Requirements
CCR	Code of California Regulations
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
DHS	California Department of Health Services
DTSC	California Department of Toxic Substances Control
EPA	Environmental Protection Agency
ERCS	Emergency Response Contract Services
ESD	Explanation of Significant Differences
FY	Fiscal Year
gpm	gallons per minute
IC	Institutional Controls
MCLs	Maximum Contaminant Levels
MW	Monitoring Well(s)
N/A	Not Applicable
NCP	National Oil and Hazardous Substances Pollution contingency Plan
NCRWQCB	North Coast Regional Water Quality Control Board
NPDES	National Pollutant Discharge Elimination System
NPL	National Priorities List
O&M	Operations and Maintenance
OSC	On Scene Coordinator
OSWER	Office of Solid Waste and Emergency Response
OU	Operable Unit
P&T	Pump and Treat
PCOR	Preliminary Closeout Report
ppb	parts per billion
RA	Remedial Action
RD	Remedial Design
RI/FS	Remedial Investigation/Feasibility Study
ROD	Record of Decision
RPM	Remedial Project Manager
SSC	State Superfund Contract
TI	Technical Impracticability
VOCs	Volatile Organic Compounds

Five-Year Review Summary Form

SITE IDENTIFICATION

Site name *(from WasteLAN)*: Del Norte Pesticide Storage Area

EPA ID *(from WasteLAN)*: CAD000626176

Region: IX | **State:** CA | **City/County:** Del Norte County

SITE STATUS

NPL status: ✖ Final ☐ Deleted ☐ Other (specify) _____

Remediation status (choose all that apply): ☐ Under Construction ☐ Operating ✖ Complete

Multiple OUs? ☐ YES ✖ NO | **Construction completion date:** 07/18/1992

Has site been put into reuse? ☐ YES ✖ NO

REVIEW STATUS

Reviewing agency: ✖ EPA ☐ State ☐ Tribe ☐ Other Federal Agency _____

Author name: Beatriz Bofill

Author title: Remedial Project Manager | **Author affiliation:** EPA Region IX

Review period: 12/11/1999 to 9/20/2000

Date(s) of site inspection: 12/10/1999

Type of review: ✖ Statutory
☐ Policy (☐ Post-SARA ☐ Pre-Sara ☐ NPL-Removal only
☐ Non-NPL Remedial Action Site ☐ NPL State/Tribe-lead
☐ Regional Discretion)

Review number: ✖ 1(first) ☐ 2 (second) ☐ 3 (third) ☐ Other (specify) _____

Triggering action:
☐ Actual RA Onsite Construction at OU # ___ ☐ Actual RA Start at OU# ___
☐ Construction Completion ☐ Previous Five-Year Review Report
✖ Other (specify) A review was never scheduled b/c it was believed cleanup would be achieved w/in 5 yrs

Triggering action date *(from WasteLAN)*: 6/18/1992

Due date *(five years after triggering action date)*: 6/18/1997

Executive Summary

This is the first five-year review of the Del Norte County Pesticide Storage Area in Del Norte County, California. The results of this five-year review indicate that although Institutional Controls (IC) are not in place at the site, the remedy is protective of human health and the environment.

On August 29, 2000, an Amendment to the Record of Decision (ROD Amendment) was signed that documented the Environmental Protection Agency's (EPA) determination that the groundwater plume was technically impracticable to remediate to cleanup goals. A pump and treatment system had been operating for approximately 7 years and was no longer effective at reducing concentrations of the contaminant 1,2-Dichloropropane (1,2-DCP). Studies and monitoring of the plume showed that the plume and contaminant levels remained stable whether or not the system was functioning. The residual concentrations of 1,2-DCP will continue to be monitored until they are below the Maximum Contaminant Level (MCL) of 5 micrograms per liter (µg/L).

I. Introduction

The United States Environmental Protection Agency (EPA) Region IX has conducted a five-year review of the remedial actions implemented at the Del Norte Pesticide Storage Area site in Del Norte County, California. This review was conducted from December 1999, through September 2000. This report documents the results of the review.

The purpose of five-year reviews is to determine whether the remedy at a site is protective of human health and the environment. The methods, findings, and conclusions of reviews are documented in five-year review reports. In addition, five-year review reports identify deficiencies found during the review, if any, and recommendations to address them.

As a result of the ROD Amendment which allows contaminant levels in groundwater to exceed MCLs indefinitely, this review is now required by statute. EPA must implement five-year reviews consistent with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) and the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). CERCLA § 121(c), as amended states:

> If the President selects a remedial action that results in any hazardous substances, pollutants, or contaminants remaining at the site, the President shall review such remedial action no less often than each five years after the initiation of such remedial action per OSWER Directive 9355.702A to assure that human health and the environment are being protected by the remedial action being implemented.

The NCP part 300.430(f)(4)(ii) of the Code of Federal Regulations (CFR) states:

> If a remedial action is selected that results in hazardous substances, pollutants, or contaminants remaining at the site above levels that allow for unlimited use and unrestricted exposure, the lead agency shall review such action no less often than every five years after the initiation of the selected remedial action.

This is the first five-year review for the Del Norte Pesticide Storage Area. Prior to the ROD Amendment a policy rather than a statutory Five-Year Review was required. The triggering action for this policy review was June 18, 1992, the date of construction completion. However, documents show that cleanup was expected to be achieved within two to four years, and a five-year review was originally not believed to be required.

II. Site Chronology

Table 1 lists the chronology of events for the Del Norte Pesticide Storage Area .

Table 1: Chronology of Site Events

Event	Date
8/13/1981	Initial discovery of problem by NCRWQCB
10/1981	Cleanup and Abatement Order No. 81-213 issued by NCRWQCB
12/1981	DHS collects on-site soil samples
1/1982	Removal of 1,150 containers from the site
4/1982	440 contaminated barrels shipped to licensed recycler
1983	NPL listing
5/1985	RI/FS complete
9/30/1985	ROD signature
5/1986	U.S. Army Corp of Engineers contracted to complete RD
8/1987	Soil removal of 290 cubic yards of contaminated soil
4/1988	RD complete
1989	EPA ascertains chromium at site due to natural causes
9/21/1989	ROD modified via ESD
9/1989	Construction of P&T begins
4/1990	Construction of P&T completed and running
4/23/1990	DTSC concurs with P&T and agrees to pay 50% of costs
6/18/1992	PCOR/ Construction Completion
3/9/2000	Proposed Plan presented at community meeting
8/29/2000	ROD Amendment signed
9/20/2000	First Five-Year Review
9/20/2005	Second Five-Year Review scheduled

III. Background

The Del Norte Pesticide Storage Area Superfund Site (site), located approximately one mile northwest of Crescent City, California, consists of less than one acre of land contaminated

with a variety of herbicides, pesticides, and other compounds. The site is located in a rural area immediately south of McNamara Field, the airport that serves Del Norte County (See Figure 1). According to the California Department of Finance, approximately 28,100 people presently reside in Del Norte County.

As of January 1999, the population of Crescent City was estimated at 8,200. In 1999, EPA estimated that 800 persons live within one mile of the Del Norte County Pesticide Storage Area Site.

The Storage site closed in 1981, is fenced, locked, and posted with a public notice stating that hazardous substances may be present. Del Norte County owns the Del Norte Site and the land surrounding it. The entire County-owned parcel (including the site) covers an area of approximately 480 acres. The County property is bounded on the north by State-owned land, which is intended for use as a natural and recreational area; on the south by Washington Boulevard; on the east by Riverside Drive; and on the west by the Pacific Ocean.

In December 1969, Del Norte County notified the North Coast Regional Water Quality Control Board (NCRWQCB) of the County's intent to operate a pesticide container storage area. The County requested operating advice and approval from the NCRWQCB, and in January 1970, the NCRWQCB responded with suggested operating procedures and requested additional information about the site. During 1970, the site was designated by the NCRWQCB as a Class II-2 disposal site. It was to serve as a County-wide collection point for interim or emergency storage of pesticide containers generated by local agricultural and forestry-related industries. The NCRWQCB approved the site for this use, provided that all containers were triple rinsed and punctured prior to arrival at the site.

The Storage Area operated from 1970-1981. In the fall of 1981, the NCRWQCB and California Department of Health Services (DHS) discovered soil and groundwater contamination. This discovery indicated that the pesticide containers had been rinsed on-site, and that the residues and rinseates were improperly disposed of in a bermed, unlined sump area. Preliminary investigations from 1981-1983, by NCRWQCB and DHS, identified soil and groundwater contamination with herbicides, pesticides and volatile and semivolatile compounds. Del Norte County's inability to fund further investigations initiated the process of listing the site on the NPL in the fall of 1983.

EPA completed Remedial Investigation/ Feasibility Study (RI/FS) activities in 1985. The results of those investigations indicated the contaminants of concern were 1,2-DCP and 2,4-dichlorophenoxyacetic acid (2,4-D). At that time, the contaminant plume was estimated to have extended approximately 170 feet to the southeast of the site. Investigations also indicated that elevated levels of chromium were also present in soils at the site.

IV. Remedial Actions

The 1985 Record of Decision (ROD) selected excavation and off-site disposal of contaminated soils and extraction and treatment of the groundwater through pump and treat as the remedy.

In December 1987, EPA performed a removal action in which 290 cubic yards of contaminated soils were excavated and disposed of off-site at a licensed hazardous waste disposal facility. That action completed the source removal activities and soil remedy for the site. Continued groundwater monitoring between 1985 and 1987, during the pump and treatment system design phase, indicated the levels of 2,4-D and 1,2-DCP were decreasing significantly in the groundwater. Between 1985 and 1989 (after the source removal but before installation of the pump and treatment system) the levels of 2,4-D in monitoring wells at the site decreased to less than 2 micrograms per liter (µg/1). The ROD established a 100µg/1 cleanup level for 2,4-D, which was met prior to implementation of the treatment system. The levels of 1,2-DCP decreased from approximately 2000µg/1 to 600µg/1 in the same time period; although the concentrations remained above the 10 µg/l cleanup level. These reductions were likely a result of the source removal and biodegradation and/or volatilization of the contaminants in the groundwater.

Additional investigations into chromium levels in soils in the area were performed between 1985 and 1987. Those investigations indicated that the chromium levels were naturally high due to the presence of chromium ore in the bedrock source rock in the area. Based on these findings, an Explanation of Significant Differences (ESD) was prepared in September 1989. The ESD documented that the chromium levels in the soil did not require remediation through removal. As a result of the conclusion that chromium in soil did not require remediation, it was determined that the groundwater remedy did not need to address chromium. The selected groundwater remedy of carbon filtration, coagulation and sand filtration was changed to aeration. Aeration had been considered in the original ROD alternatives but was not chosen due to its ineffective removal of 2,4-D and chromium. The cleanup level for l ,2-DCP was not changed by the ESD.

The pump and treatment system was installed in 1990 and began extracting groundwater from one extraction well at the rate of 15 gallons per minute (gpm). The treatment system operated continuously from April 1990 to December 1994. During that period it was observed that 1,2-DCP concentrations in the groundwater monitoring wells located within the plume had reached asymptotic levels: between approximately 40µg/1 and 15µg/l. In 1994, EPA installed an air sparging system to determine if the injection of air into the aquifer would enhance contaminant removal. Additional sparge points were added in 1995. No discernible changes in the levels of 1,2-DCP in groundwater were noted.

In 1994, EPA also began a program of turning the groundwater treatment system off for extended periods of time to determine what effect it would have on contaminant concentrations. The system was turned off for approximately six months in 1995, and then restarted. It was

turned off again for six months in 1996. No discernible differences were noted either time. The system has been off since October 1997 and semiannual monitoring reports show that contaminant concentrations continue to decline slowly, at the same rate as when the treatment system was operating. This trend led the agency to further investigate the behavior of the plume and it was found that it was technically impracticable to restore the aquifer to MCLs. On August 29, 2000, the agency finalized a ROD Amendment that would change the remedy.

A. Remedy Selection

The first ROD for the Del Norte Pesticide Storage Area site was signed on September 30, 1985. The remedial action objectives included in the 1985 ROD were:

-Minimize off-site contamination from the migration of contaminated groundwater; and
-Restore the contaminated groundwater to MCLs.

The remedial actions implemented through the 1985 ROD were:
- Groundwater extraction and treatment through carbon adsorption and coagulation/filtration treatments:
- Truck treated groundwater to Crescent City Waste Water Treatment Plant; and
- Excavation and disposal of contaminated soils.

In 1989, it was discovered that chromium occurred naturally in site soils and therefore did not need remediation. In addition, the contaminant 2,4-D was no longer detected in the groundwater. Coagulation/filtration had been selected in the ROD to cleanup chromium in the water and carbon adsorption had been selected in the ROD to cleanup 2,4-D in the water. Because it was determined that these technologies were no longer required, an ESD signed on September 21, 1989, modified the remedy selected in the ROD to air stripping.

In a ROD Amendment signed on August 29, 2000, EPA concluded that the remedial objective of restoring the contaminated groundwater to MCLs will not be met because no technology exists capable of reaching drinking water quality under the conditions found at the site.

The remedial action objectives included in the ROD Amendment are to:
- Contain the contaminated groundwater; and
- Prevent its use as drinking water for as long as it remains above drinking water levels.

The remedial actions implemented through the ROD Amendment are:
- Containment of the groundwater plume;
- Identification of a new ARAR for 1,2-DCP (changes MCL to 5µg/L):
- Semiannual groundwater monitoring;
- Institutional Controls; and
- A technical impracticability waiver of the cleanup goal.

B. Remedy Implementation

The first remedial action taken at the site was a soil removal of approximately 290 cubic yards. The removal was conducted in August of 1987. Contracting activities were provided by the removal program's Emergency Response Contracting Service (FRCS), Riedel Environmental Services. The remedial design for the aeration treatment system at the site was started and completed in 1989 by an EPA On Scene Coordinator (OSC). Construction activities were conducted through ERCS; commenced in September 1989, and completed in April 1990. Extraction and monitoring wells were already in place from activities conducted during the RI/FS and RD.

EPA signed a State Superfund Contract (SSC) with DHS Toxic Substances Control Division, currently the Department of Toxic Substances Control (DTSC), on July 19, 1988, in which DHS agreed to pay for 50% of the remedial action costs.

The site achieved construction completion status when the Preliminary Close Out Report was signed on June 18, 1992.

C. System Operations

Operations and Maintenance (O&M) of the treatment system is no longer being performed because the treatment system has been turned-off since October 1997. The remedy has now been amended to containment, monitoring, land use restrictions and a Technical Impracticability (TI) waiver of the remediation goal.

Previously, operations and maintenance were handled in house by EPA. Repairs to the discharge pipeline, daily inspections and recording instrument readings were performed by employees of Del Norte County.

Table 2: Annual O&M Costs

Dates		**Total Cost**
From	To	
1/1/1995	12/31/1995	$ 166,518
1/1/1996	12/31/1996	$ 106,928
1/1/1997	12/31/1997	$ 84,211
1/1/1998	12/31/1998	$ 49,225
1/1/1999	12/31/1999	$ 44,072

V. Five Year Review Process

The Del Norte Pesticide Storage Area five-year review was led by Beatriz Bofill, EPA's Remedial Project Manager (RPM) for the Del Norte Pesticide Storage Area site. The following team members assisted in the review:

- Brad Shipley, EPA OSC;
- Mark Piros, DTSC project manager;
- Ernie Perry, Del Norte County Department of Planning;
- James Buckles, Del Norte County Agriculture Commission;
- Mark Filippini, EPA Hydrogeologist; and
- Carolyn Kenmore, EPA.

This five-year review consisted of the following activities: a review of relevant documents (see Attachment 1); and a site inspection. In addition, a notice regarding the forthcoming review was mailed out to the community in a fact sheet and was discussed at a community meeting held on March 9, 2000. The completed report is available in the information repository located at the Crescent City Library.

VI. Five-Year Review Findings

A. Site Inspection

The site inspection was conducted by Carolyn Kenmore of the EPA, on December 10, 1999. Representatives of the Del Norte County Department of Agriculture, Del Norte County Environmental Health, DTSC, and EPA were present.

County employees from the Department of Agriculture who handled daily inspection and maintenance of the air stripper when it was running were present to discuss the duties they conducted. Daily logs are available on-site and are up to date. The treatment system has been shut-off since October of 1997. The machinery itself was not inspected for proper functioning, but was noted to be in good condition. The treatment system is scheduled to be decommissioned.

The site inspection checklist attached to this document contains more details on the inspection.

B. Risk Information Review

The following standards were identified as applicable or relevant and appropriate requirements (ARARs) in the ROD and ROD Amendment. They were reviewed for changes that could affect protectiveness:

- National Primary Drinking Water Standards (40 CFR Parts 141):
- Title 22 CCR Section 64444: and
- Porter-Cologne Water Quality Control Act (California Water code Sections 13140-13147, 13172, 13260, 13262, 13267.

These standards have not changed.

C. Data Review

A review of records and monitoring reports through March 2000 indicate that the groundwater treatment system operated for nearly seven years. The system was operated at a continuous pumping rate of 15 gallons per minute. Since its installation, and accounting for shut-down periods, the system has operated a total of 79 months. That represents approximately 51 million gallons of treated groundwater. The system has now processed 68 pore volumes of the plume. The estimated volume of 1,2-DCP removed by the system has been calculated to be approximately 3.75 gallons (14.2 liters or 16.4 kilograms). Approximately 95% of that mass was removed within the first four years of operation (1990 to 1994).

Table 3: Comparison of Initial and Current Groundwater Concentrations

Contaminant	Well	1985 Highest Concentration (Pre-Remedial) (ppb)	1987 Highest Concentration (ppb)	1994 Highest Concentration (ppb)	1999 Highest Concentration (ppb)	Cleanup Level (ppb)
1,2-DCP	1*	2100	--	--	ND	5
1,2-DCP	25	5	--	8	1.9	5
1,2-DCP	104	--	--	130	8.2	5
1,2-DCP	105	--	--	23	23	5
2,4-D	1	150	28	--	--	100

* Monitoring well #1 was replaced with monitoring well #108
-- Not sampled on this date

VII. Assessment

The following conclusions support the determination that the remedy at the Del Norte site is expected to be protective of human health and the environment.

Question A: Is the remedy functioning as intended by the decision documents?

- ***ROD Amendment:*** The water treatment system has been shut-off since October 1997. Monitoring shows that the plume is contained and contaminant concentrations are in a slow decline.
- ***Implementation of Institutional Controls and Other Measures:*** Institutional controls will soon be in place. The land is property of the County and it is believed the controls will be easily enforced.
- ***System Operations/O&M:*** Currently, O&M requires semiannual sampling. The sampling has been consistent with the previous sampling plan approved under the O&M and Sampling manual prepared in February of 1991.
- ***Cost of System Operations/O&M:*** As noted above in Section IV, costs for the most part have been within an acceptable range.
- ***Opportunities for Optimization:*** The water treatment system has been shut-off since October 1997. Optimization is not applicable.
- ***Early Indicators of Potential Remedy Failure:*** No early indicators of potential remedy failure were noted during the review.

Question B: Are the assumptions used at the time of remedy selection still valid?

- ***Changes in Standards and To Be Considereds:*** There were no changes since the ROD Amendment was signed on August 29, 2000.

Changes in Exposure Pathways: No changes in the site conditions that affect exposure pathways were identified as part of the five-year review. First, there are no current changes in land use. Second, no new contaminants, sources, or routes of exposure were identified as part of this five-year review. Finally, there is no indication that hydrologic/hydrogeologic conditions are not adequately characterized. The rate of decrease of contaminant levels in groundwater is consistent with expectations at the time of the ROD Amendment, and the groundwater plume has been successfully contained.

- ***Changes in Toxicity and Other Contaminant Characteristics:*** Toxicity and other factors for contaminants of concern have not changed.
- ***Changes in Risk Assessment Methodologies:*** Changes in risk assessment methodologies since the time of the ROD Amendment do not call into question the protectiveness of the remedy.

Question C: Has any other information come to light that could call into question the protectiveness of the remedy?

No additional information has been identified that would call into question the protectiveness of the remedy.

VIII. Deficiencies

Institutional Controls were part of the remedy of the 2000 ROD Amendment. These controls are not yet in place at the site.

IX. Recommendations and Follow-up Actions

A Consent Decree between EPA, the State and the County is currently being drafted. The specific controls that will be adopted at the site will be listed in detail in this document. The State is currently preparing a Land Use Covenant which will record the restrictions against the property. The next Five-Year Review should verify that these controls have been put into practice at the site.

X. Protectiveness Statements

The remedial actions taken at the Del Norte site are expected to be protective of human health and the environment. The plume has been stable since the water treatment system was shut down in October 1997. Contamination levels have been in a very gradual decline, and are expected to continue to decline at a very slow rate.

The extent of the original plume was believed to be about 12,000 square feet, reaching approximately 300 feet south of the source. The nearest private well to the site is over 10,000 feet away from the source of the plume. As stated above, the size of the plume has continued to shrink and extends approximately 5,000 square feet. or 120 feet south of the site. Site contaminants have never been detected in the surrounding residential wells, and there is no evidence to believe that contamination has been introduced since the last sampling event.

XI. Next Review

This site requires on-going five-year reviews by statute. The next review will be conducted within five years of the completion of this five-year review report. The completion date is the date of the signature shown on the signature cover attached to the front of the report.

XII. Other Comments

It is anticipated that the activities at this site will he transferred to the State of California Department of Toxic Substances Control as of January 1, 2001, as per the requirements of the State Superfund Contract.

List of Documents Reviewed

List of Documents-Reviewed

"Del Norte County Pesticide Storage Area Site Remedial Investigation Final Report," prepared for US EPA Region IX, by Camp Dresser & McKee Inc., September 13, 1985.

CERCLA Record of Decision for Del Norte County Pesticide Storage Area, Del Norte County, CA, September 30, 1985.

"Immediate Removal Funding Request for the Del Norte County Pesticide Storage Area Site, Crescent City, Del Norte County, California," US EPA Region IX OSC, Brad Shipley, August 11, 1987.

"Health Assessment for Del Norte County Pesticide Storage Area Crescent City, Del Norte County, California" Prepared by the Agency for Toxic Substances and Disease Registry U.S. Public Health Service, April 10, 1989.

"Explanation of Significant Differences for Remedial Action at the Del Norte County Pesticide Storage Area Site, Crescent City, California," US EPA IX OSC, Brad Shipley, September 21, 1989.

"Request for a Removal Action at the Del Norte County Pesticide Storage Area Site, Crescent City, California," US EPA Region IX OSC, Brad Shipley, signed September 22, 1989.

"Operation, Maintenance and Sampling Manual for Del Norte County Pesticide Storage Area, Groundwater Containment Air Stripping System" US EPA Region IX, prepared for US EPA by Ecology and Environment Inc., February 20, 1991.

"Superfund Site Interim Close Out Report: Del Norte County Pesticide Storage Area Crescent City, California," US EPA Region IX OSC, Brad Shipley, signed June 18, 1992.

"Selected Groundwater Monitoring Well Sample Results for the Del Norte County Pesticide Storage Area Site, Crescent City, California," US EPA Region IX OSC, Brad Shipley, 1999.

Site Map

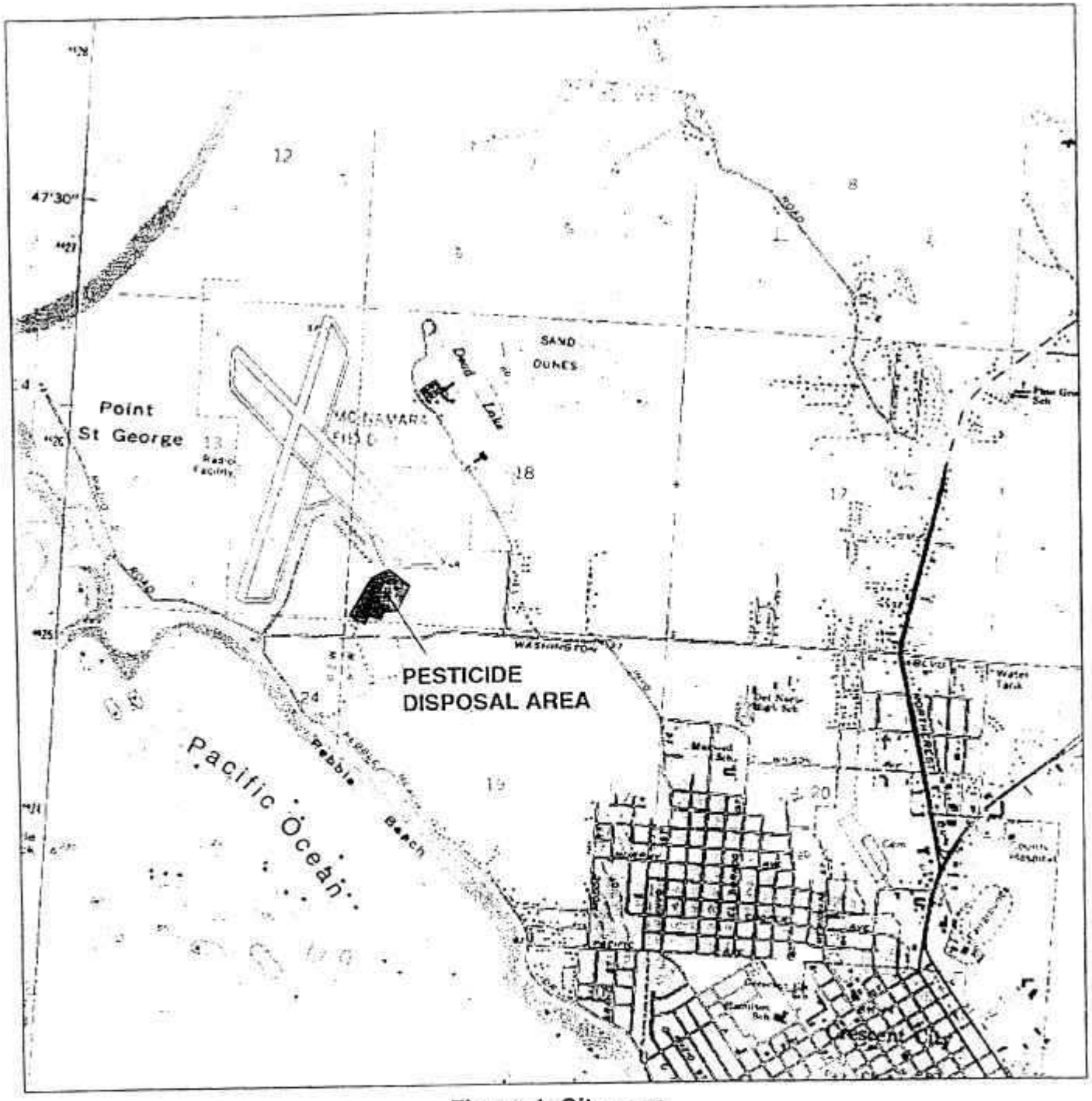

Figure 1: Site map

Site Inspection Checklist

Five-Year Review Site Inspection Checklist

I. SITE INFORMATION

Site name: **Del Norte**	**Date of inspection: 12/10/99**
Location and Region: R/9 Crescent City, CA	**EPA ID: CAD000626176**
Agency office, or company leading the five-year review: EPA/Superfund	**Weather/temperature: raining/55 degrees**

Remedy Includes: (Check all that apply)

- ☐ Landfill cover/containment
- ☐ Access controls
- ☐ Institutional controls
- X Groundwater pump and treatment
- ☐ Surface water collection and treatment
- ☐ Other__ _____ _____

_____

Attachments: (X) Inspection team roster attached (X) Site map attached

II. INTERVIEWS (Check all that apply)

1 **O&M site manager** ___**Brad Shipley** _____ **On Scene Coordinator**___ ___**12/10/99**_
Name Title Date

Interviewed **X** at site **X** at office ☐ by phone Phone no. **415-744-2287**

Problems, suggestions: ☐ Report attached - **Treatment system has been shut down since 10/97 If the treatment system was re-started minor maintenance and repair would be needed.**

2 **O&M staff** __**Jim Buckles** _ _**Del Norte County Agricultural Agent**_____**12/10/99**_____
___

Name Title Date

Interviewed (X) at site ☐ at office ☐ by phone Phone no. _**707-464-7235**

Problems, suggestions: ☐ Report attached __Site is a fund lead site.

Brad Shipley(OSC) and Jim Buckles from the Del Norte County Agricultural station oversee O&M.

3. **Local regulatory authorities and response agencies** (i.e., State and Tribal offices, emergency response office, police department, office of public health or environmental health, zoning office, recorder of deeds, or other city and county offices, etc.) Fill in all that apply.

Agency – **Del Norte County Agricultural Department**_____
Contact – **Jim Buckles**_____ **12/10/99** **707-464-7235**
Name Title Date Phone no.
Problems: suggestions; ☐ Report attached
Occasional vandalism by youths of the discharge line.

Agency – **Del Norte County Health Department**

Contact – **Leon Perreault** **Lead Environmental Health contact** **11/10/99** **707-464-3191**

Name Title Date Phone no.
Problems ; suggestions; ☐ Report attached **No problems identified**_____

Agency – **Del Norte County Community Development Dept.**_____
Contact – **Ernie Perry** _____ **Director** **12/10/99**___ **707-464-7254**
Name Title Date Phone no.
Problems: suggestions; (**X**) Report attached __ _____

See attachment_____

Agency _____
Contact _____ _____ _____ _____
Name Title Date Phone no.
Problems: suggestions; ☐ Report attached _____

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4. **Other interviews** (optional) ☐ Report attached.

III. ONSITE DOCUMENTS & RECORDS VERIFIED (Check all that apply)

1. **O&M Documents**

☐ O&M manual	☐ Readily available	☐ Up to date	☐ N/A
☐ As-built drawings	☐ Readily available	☐ Up to date	☐ N/A
(X) Maintenance logs	(X)Readily available	(X)Up to date	☐ N/A

Remarks – maintenance records kept on site_____

2. **Site-Specific Health and Safety Plan** Readily available ☐ Up to date ☐ N/A
☐ Contingency plan/emergency response plan ☐ Readily available ☐ Up to date ☐ N/A
Remarks

3. **O&M and OSHA Training Records** ☐ Readily available ☐ Up to date ☐ N/A
Remarks

4. **Permits and Service Agreements**

☐ Air discharge permit	☐ Readily available	☐ Up to date	(X)N/A
(X)Effluent discharge	(X)Readily available	(X) Up to date	☐ N/A
(X)Waste disposal, POTW	(X)Readily available	(X) Up to date	☐ N/A
☐ Other permits	☐ Readily available	☐ Up to date	☐ N/A

Remarks – **Written agreement with owners of the Seawood apartments to run discharge line to the apartment's sewer main. Agreement with the municipal treatment company for Crescent City to discharge treated water.**

5.. **Gas Generation Records** ☐ Readily available ☐ Up to date (X) NA
Remarks

6. **Settlement Monument Records** ☐ Readily available ☐ Up to date (X) N/A
Remarks

7. **Groundwater Monitoring Records** (X)Readily available (X) Up to date ☐ N/A
Remarks **Located in Region 9 Office**

8. **Leachate Extraction Records** ☐ Readily available ☐ Up to date (X) N/A
Remarks

9. **Discharge Compliance Records**

☐ Air	☐ Readily available	☐ Up to date	☐ N/A
(X)Water (effluent)	(X)Readily available	☐ Up to date	☐ N/A

Remarks – **air emissions were passed through ultra violet lights. Air emissions from the air stripper system were within the Federal & State limits but, for an extra measure of protection.**

10. **Daily Access/Security Logs** (X) Readily available (X) Up to date ☐ N/A
Remarks **Access logs kept at the site.**

IV. O&M COSTS

1. **O&M Organization**
☐ State in-house ☐ Contractor for State
☐ PRP in-house ☐ Contractor for PRP
(X) Other **Region 9 performed O&M in-house with assistance from Del Norte County**

2. **O&M Cost Records**
(X) Readily available (X) Up to date
☐ Funding mechanism/agreement in place
Original O&M cost estimate_____

Total annual cost by year for review period if available

From To From	From **1/1/1995** Date	To **12/31/1995** Date	**$199,518. 96** Total cost	☐ Breakdown attached
	From **1/1/1996** Date	To **12/31/1996** Date	**$106,928.76** Total cost	☐ Breakdown attached
	From **1/1/1997** Date	To **12/31/1997** Date	**$84,211.17** Total cost	☐ Breakdown attached
	From **1/1/1998** Date	To **12/31/1998** Date	**$49.255.53** Total cost	☐ Breakdown attached
	From **1/1/1999** Date	To **12/31/990** Date	**$44, 072.00** Total cost	☐ Breakdown attached

(Total Five Year Cost is $483,986.42)

3. **Unanticipated or Unusually High O&M Costs During Review Period**
Describe costs and reasons: _____

There were no unanticipated or unusually high O&M costs during the review period ____

V. ACCESS AND INSTITUTIONAL CONTROLS ☐ Applicable ☐ N/A

A. Fencing

1. **Fencing damaged** ☐ Location shown on site map (X) Gates secured ☐ N/A
Remarks– **Original fence was replaced because of corrosion. The current fence is in good condition. The gate is secured and is in good condition**
_____
_____

B. Other Access Restrictions

1. **Signs and other security measures** ☐ Location shown on site map ☐ N/A
Remarks – **Signs are posted on each of the four sides of the fence and they are in good condition.**

C. Institutional Controls

1. **Implementation and enforcement**
Site conditions imply ICs not properly implemented ☐ Yes ☐ No (X) N/A
Site conditions imply ICs not being fully enforced ☐ Yes ☐ No (X)N/A
Type of monitoring (e.g., self-reporting, drive by) _____
Frequency _____
Responsible party/agency _____
Contact _____ _____ _____ _____
Name Title Date Phone no.
Reporting is up-to-date ☐ Yes ☐ No ☐ N/A
Reports are verified by the lead agency ☐ Yes ☐ No ☐ N/A

Specific requirements in deed or decision documents have been met ☐ Yes ☐ No ☐ N/A
Violations have been reported ☐ Yes ☐ No ☐ N/A
Other problems or suggestions: ☐ Report attached
The site is owned by Del Norte County which controls access & land use for the site.. No specific institutional controls were specified in the Record of Decision (ROD). EPA and the State of California (DTSC) intend to include institutional controls as a component of a forthcoming amendment to the ROD which is expected to be issued during FY 2000.

2. **Adequacy** ☐ ICs are adequate ☐ ICs are inadequate (X) N/A
Remarks – **No IC's in place. Land use restrictions are anticipated in the forthcoming ROD amendment.**

D. General

1. **Vandalism/trespassing** ☐ Location shown on site map ☐ No vandalism evident
Remarks – **Breaks in discharge line from vandalism (this is outside of the fenced area). No other vandalism is evident. In the past vandals have broken into the treatment building and stolen tools.**

2. **Land use changes onsite** ☐ N/A
Remarks – **Land use remains the same. Only change –boat ramp installed on the perimeter of site. Drainage ditches on or near site have been recently "re-trenched." (These ditches, according to the Del Norte County Planning Dept., are not new ditches but are existing ones that have been cleaned-out.)**

3. **Land use changes offsite** ☐ N/A

Remarks – **No significant changes. Possible future light industrial –hangers and pavement– onsite per Del Norte County's Planning Department.**.

VI. GENERAL SITE CONDITIONS

A. Roads (X) Applicable ☐ N/A

1. **Roads damaged** (X) Location shown on site map (X) Roads adequate ☐ N/A

Remarks– **Access road is gated and is in good condition. This road is controlled by Del Norte County.**

B. Other Site Conditions

Remarks – **As mentioned above, under D-2, some recent trenching reopened drainage ditches on or near the site. This could possibly affect the groundwater contours at the site.**

VII. LANDFILL COVERS ☐ Applicable (X) N/A

A. Landfill Surface

1. **Settlement** (Low spots) ☐ Location shown on site map ☐ Settlement not evident
Areal extent_____ Depth_____
Remarks_____

2. **Cracks** ☐ Location shown on site map ☐ Cracking not evident
Lengths_____ Widths_____ Depths_____
Remarks_____

3. **Erosion** ☐ Location shown on site map ☐ Erosion not evident
Areal extent_____ Depth_____
Remarks_____

4. **Holes** ☐ Location shown on site map ☐ Holes not evident
Areal extent_____ Depth_____
Remarks_____

5. **Vegetative Cover** ☐ Grass ☐ Cover properly established ☐ No signs of stress
☐ Trees/Shrubs (indicate size and locations on a diagram)
Remarks_____

6. **Alternative Cover (armored rock, concrete, etc.)** ☐ N/A
Remarks_____

7. **Bulges** ☐ Location shown on site map ☐ Bulges not evident
Areal extent_____ Height_____
Remarks_____

8. **Wet Areas/Water Damage** ☐ Wet areas/water damage not evident
☐ Wet areas ☐ Location shown on site map Areal extent_____
☐ Ponding ☐ Location shown on site map Areal extent_____
☐ Seeps ☐ Location shown on site map Areal extent_____
☐ Soft subgrade ☐ Location shown on site map Areal extent_____
Remarks_____

9. **Slope Instability** ☐ Slides ☐ Location shown on site map ☐ No evidence of slope instability
Areal extent_____
Remarks_____

B. Benches ☐ Applicable ☐ N/A
(Horizontally constructed mounds of earth placed across a steep landfill side slope to interrupt the slope in order to slow down the velocity of surface runoff and intercept and convey the runoff to a lined channel.)

1. **Flows Bypass Bench** ☐ Location shown on site map ☐ N/A or okay
Remarks_____

2. **Bench Breached** ☐ Location shown on site map ☐ N/A or okay
Remarks_____

3. **Bench Overtopped** ☐ Location shown on site map ☐ N/A or okay
Remarks_____

C. Letdown Channels ☐ Applicable ☐ N/A
(Channel lined with erosion control mats, riprap, grout bags, or gabions that descend down the steep side slope of the cover and will allow the runoff water collected by the benches to move off of the landfill cover without creating erosion gullies.)

1. **Settlement** ☐ Location shown on site map ☐ No evidence of settlement
Areal extent_____ Depth_____
Remarks_____

2. **Material Degradation** ☐ Location shown on site map ☐ No evidence of degradation
Material type_____ Areal extent_____
Remarks_____

3. **Erosion** ☐ Location shown on site map ☐ No evidence of erosion
Areal extent_____ Depth_____
Remarks_____

4. **Undercutting** ☐ Location shown on site map ☐ No evidence of undercutting
Areal extent_____ Depth_____
Remarks_____

5. **Obstructions** Type_____ ☐ No obstructions
☐ Location shown on site map Areal extent_____
Size_____
Remarks_____

6. **Excessive Vegetative Growth** Type_____
☐ No evidence of excessive growth
☐ Vegetation in channels does not obstruct flow
☐ Location shown on site map Areal extent_____
Remarks_____

D. Cover Penetrations ☐ Applicable ☐ N/A

1. **Gas Vents** ☐ Active ☐ Passive
☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
☐ Evidence of leakage at penetration ☐ Needs O&M ☐ N/A
Remarks_____

2. **Gas Monitoring Probes**
☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
☐ Evidence of leakage at penetration ☐ Needs O&M ☐ N/A
Remarks_____

3. **Monitoring Wells** (within surface area of landfill)
☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
☐ Evidence of leakage at penetration ☐ Needs O&M ☐ N/A
Remarks_____

4. **Leachate Extraction Wells**
☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
☐ Evidence of leakage at penetration ☐ Needs O&M ☐ N/A
Remarks_____

5. **Settlement Monuments** ☐ Located ☐ Routinely surveyed ☐ N/A
Remarks_____

E. Gas Collection and Treatment ☐ Applicable ☐ N/A

1. **Gas Treatment Facilities**
☐ Flaring ☐ Thermal destruction ☐ Collection for reuse
☐ Good condition ☐ Needs O&M
Remarks_____

2. **Gas Collection Wells, Manifolds and Piping**
☐ Good condition ☐ Needs O&M
Remarks_____

3. **Gas Monitoring Facilities** (e.g., gas monitoring of adjacent homes or buildings)
☐ Good condition ☐ Needs O&M ☐ N/A
Remarks_____

F. Cover Drainage Layer ☐ Applicable ☐ N/A

1. **Outlet Pipes Inspected** ☐ Functioning ☐ N/A
Remarks_____

2. **Outlet Rock Inspected** ☐ Functioning ☐ N/A
Remarks_____

G. Detention/Sedimentation Ponds ☐ Applicable ☐ N/A

1. **Siltation** Areal extent_____ Depth_____ ☐ N/A
☐ Siltation not evident
Remarks_____

2. **Erosion** Areal extent_____ Depth_____
☐ Erosion not evident
Remarks_____

3. **Outlet Works** ☐ Functioning ☐ N/A
Remarks_____

4. **Dam** ☐ Functioning ☐ N/A
Remarks_____

H. Retaining Walls ☐ Applicable ☐ N/A

1. **Deformations** ☐ Location shown on site map ☐ Deformation not evident
   Horizontal displacement_____ Vertical displacement_____
   Rotational displacement_____
   Remarks_____

2. **Degradation** ☐ Location shown on site map ☐ Degradation not evident
   Remarks_____

I. Perimeter Ditches/Off-Site Discharge ☐ Applicable ☐ N/A

1. **Siltation** ☐ Location shown on site map ☐ Siltation not evident
   Areal extent_____ Depth_____
   Remarks_____

2. **Vegetative Growth** ☐ Location shown on site map ☐ N/A
   ☐ Vegetation does not impede flow
   Areal extent_____ Type_____
   Remarks_____

3. **Erosion** ☐ Location shown on site map ☐ Erosion not evident
   Areal extent_____ Depth_____
   Remarks_____

4. **Discharge Structure** ☐ Functioning ☐ N/A
   Remarks_____

VIII. VERTICAL BARRIER WALLS ☐ Applicable (X) N/A

1. **Settlement** ☐ Location shown on site map ☐ Settlement not evident
   Areal extent_____ Depth_____
   Remarks_____

2. **Performance Monitoring** Type of monitoring_____
   ☐ Performance not monitored
   Frequency_____ ☐ Evidence of breaching
   Head differential_____
   Remarks_____

IX. GROUNDWATER/SURFACE WATER REMEDIES (X) Applicable ☐ N/A			
A. Groundwater Extraction Wells, Pumps, and Pipelines		(X)Applicable	☐ N/A
1.	**Pumps, Wellhead Plumbing, and Electrical** (X) Good condition (X) All required wells located ☐ Needs O&M ☐ N/A Remarks – **System in good condition. May need minor maintenance if restarted.**		
2.	**Extraction System Pipelines, Valves, Valve Boxes, and Other Appurtenances** (X) Good condition ☐ Needs O&M Remarks – **Some leaks due to corrosion, needs minor maintenance.**		
3.	**Spare Parts and Equipment** (X) Readily available ☐ Good condition ☐ Requires upgrade ☐ Needs to be provided Remark – **It is possible that compressors might need to be replaced if the treatment system is restarted but they are easy to obtain.**		
B. Surface Water Collection Structures, Pumps, and Pipelines		☐ Applicable	(X) N/A
1.	**Collection Structures, Pumps, and Electrical** ☐ Good condition ☐ Needs O&M Remarks		
2.	**Surface Water Collection System Pipelines, Valves, Valve Boxes, and Other Appurtenances** ☐ Good condition ☐ Needs O&M Remarks		

3. **Spare Parts and Equipment**
☐ Readily available ☐ Good condition ☐ Requires upgrade ☐ Needs to be provided
Remarks _____

C. Treatment System (X) Applicable ☐ N/A

1. **Treatment Train** (Check components that apply)
☐ Metals removal ☐ Oil/water separation ☐ Bioremediation
(X) Air stripping ☐ Carbon adsorbers
(X) Filters Filters are for air and oil, no water filters involved.
☐ Additive (e.g., chelation agent, flocculent)
(X) Others – Ultra violet lights for air emissions
☐ Good condition (X) Needs O&M (minor)
(X) Sampling ports properly marked and functional
(X) Sampling/maintenance log displayed and up to date
(X) Equipment properly identified
(X) Quantity of groundwater treated annually –**5 to 7 ½ million gallons annually.**
☐ Quantity of surface water treated annually **N/A**
Remarks

2. **Electrical Enclosures and Panels** (properly rated and functional)
☐ N/A (X) Good condition (X) Needs O&M
Remarks – **In good condition but may need maintenance since they have not been turned on for 1 ½ yrs.**

3. **Tanks, Vaults, Storage Vessels**
☐ N/A (X) Good condition ☐ Proper secondary containment ☐ Needs O&M
Remark – **Water discharge tanks and drums for holding sparged water are in good condition.**

4. **Discharge Structure and Appurtenances**
☐ N/A (X) Good condition ☐ Needs O&M
Remarks – **Basically in good condition. A few pipeline breaks will need maintenance if system restarted.**

5. **Treatment Building(s)**
☐ N/A (X) Good condition (esp. roof and doorways) ☐ Needs repair
(X) Chemicals and equipment properly stored
Remarks – **Condition is very good**

6. **Monitoring Wells** (pump and treatment remedy)
(X) Properly secured/locked (X) Functioning (X) Routinely sampled (X) Good condition
(X) All required wells located ☐ Needs O&M ☐ N/A

Remarks – **MW 106 is not secure. MW 1 is not functioning. It was replaced by MW 108. Only MW's 26, 25, 104 &107 are, currently, routinely monitored. Installation record shows location of all wells. EPA's Brad Shipley (OSC) knows location of all wells.**

D. Monitored Natural Attenuation

1. **Monitoring Wells** (natural attenuation remedy)
☐ Properly secured/locked ☐ Functioning ☐ Routinely sampled ☐ Good condition
☐ All required wells located ☐ Needs O&M (X) N/A
Remarks_____

X. OTHER REMEDIES

If there are remedies applied at the site which are not covered above, attach an inspection sheet describing the physical nature and condition of any facility associated with the remedy. An example would be soil vapor extraction.

XI. OVERALL OBSERVATIONS

A. Implementation of the Remedy

Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is to accomplish (i.e., to contain contaminant plume, minimize infiltration and gas emission, etc.).

The remedy was designed to reduce the level of 1,2-DCP in the ground water plume to 10 ppb based on a health advisory in effect when the ROD was signed. (Subsequent to the ROD an MCL for 1,2,-DCP was promulgated of 5 ppb.) Ground water samples from the site showed that by the end of 1994 the decrease of 1,2-DCP as a result of treatment had leveled-off. Enhancements to the system were tried but with no significant results. The treatment system was turned-on & off between 1995 and October of 1997 with the result that there was no significant decrease in 1,2-DCP whether the system was on or off. Finally, in October of 1997, the system was turned off and it has not been restarted. It appears that the 1,2-DCP is sticking to the clays and silts in the soil and that the soil is slowly releasing 1,2-DCP into the groundwater. At the same time, natural processes are believed to be breaking down 1,2-DCP. It is not likely that the rate of breakdown of 1,2-DCP from natural processes can achieve the cleanup level. The release of 1,2-DCP from the soils & the rate of 1,2-DCP breakdown are stabilizing the plume. EPA and the State believe that it is technically impracticable (TI) to clean up the groundwater using current technology given the situation described above. The ROD amendment included containment, a TI waiver of the 1,2-DCP MCL, institutional controls and monitoring.

B. Adequacy of O&M

Describe issues and observations related to the implementation and scope of O&M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy.

O&M of the treatment system is not an issue because the system has been turned-off since October 1997. EPA amended the ROD for this site which, among other actions, provide for routine monitoring. It is anticipated that the State/Del Norte County will take over the monitoring of the four wells currently being monitored by EPA when the State Superfund Contract is closed out during calendar year 2000. The other wells will be decommissioned along with the treatment system at this time. Only long term O&M of the four (or possibly more) wells used to sample the groundwater will be necessary. Another Five Year Review will be required because the groundwater is still above health based levels.

C. Early Indicators of Potential Remedy Failure

Describe issues and observations such as unexpected changes in the cost or scope of O&M or a high frequency of unscheduled repairs, that suggest that the protectiveness of the remedy may be compromised in the future.

By 1994 it was evident from groundwater monitoring records that the remedy was failing to achieve the cleanup goal for 1,2-DCP of 10 ppb in groundwater, based on a health advisory in effect at the time the ROD was signed.. (An MCL of 5 ppb was promulgated subsequent to the signed ROD.) Starting in 1994 various augmentations to the treatment system were employed but none of these significantly increased the rate at which the DCP was being removed from the groundwater. This situation coupled with data that showed that the DCP level decreased at the same slow rate whether the treatment system was turned on or off led EPA to the conclusion that a technical impracticability waiver of the cleanup standard was necessary. Section XI-A also explains the situation.

D. Opportunities for Optimization

Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy.

Optimization of the remedy is not applicable because the remedy has been turned off and will remain off. EPA anticipates that the State/Del Norte County will perform future groundwater monitoring at the site when the State Superfund Contract (SSC) is closed during calendar year 2000. At this point, details of future monitoring (which may include optimization) of the groundwater have not been addressed with the State-Del Norte County.

Site Inspection Team Roster

Carolyn Kenmore - EPA, Environmental Protection Specialist

Brad Shipley -EPA, On Scene Coordinator, Region 9

Angeles Herrera -EPA, Community Involvement Representative, Region 9

Mark Piros, Site Manager, State of California (DTSC)

Jim Buckles, Del Norte County Agricultural Station

Leon Perreault- Del Norte County, Environmental Health (Lead contact)

Notes from Interview with Ernie Perry, Director of Community Planning, Del Norte County

Residential Use: Two houses have been built on Riverside Road since the ROD was signed. These houses have private drinking water wells and are not hooked-up to public water. Other houses are not expected to be built in this area because little usable ground remains. There is a potential for the Seawood apartment complex near the site to expand. Any expansion would be hooked-up to public water. Counting the Seawood apartments, there are about 600 to 700 people living within a mile of the Del Norte site.

Agricultural Use: The agricultural land near the site is expected to remain in agricultural use because the owners want it that way. The Planning Department also inquired about the water quality in MW 11. This well is used for watering livestock.

Airport Land Use: In the future, remodeling of the airport adjacent to the site including expansion of the runway are anticipated. The county is contemplating developing a light industrial area at the airport, part of which could be on the some of the Del Norte site. Basically, the development would consist of hangers and pavement.

The Planning Department requests that EPA and the State (DTSC) define for the department exactly what is meant by any future land use restrictions, e.g., would such restrictions mean zero development of any type on the site? The county will work around the restrictions and factor them into its land use.